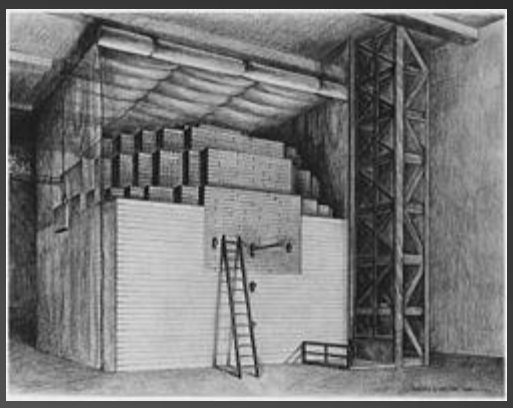
Enrico Fermi and the First Nuclear Fission Reactor

Theory: The first nuclear reactor used uranium-235 as a fuel. When the nucleus of U-235 is bombarded with a neutron it splits or undergoes fission. The result of fission is two lighter nuclei and 3 neutrons. The production of 3 neutrons in the reaction is key to producing the chain reaction that occurs in the reactor as these neutrons bombard other U-235 nuclei. The mass that operated as the difference in the binding energy of Uranium and the products is released in the reaction.



The First nuclear reactor built by Fermi at University of Chicago.

Construction: The reactor's external construction was composed of bricks and timbers. The inside of the reactor contained uranium pellets and graphite. The rate of the reaction was controlled with neutron absorbing cadmium control rods which could be inserted or removed to speed up or slow down the reactions.

Legacy: While the first reactor was used as a proof of concept of a fission chain reaction, this demonstration had a profound effect on the world, ushering in the age in which atomic energy can be utilized by humanity.